PLANET
Networking & Communication

1000Mbps
GSD-800

8-Port Gigabit Ethernet Switch
Speed Up Your Network

LAN Switches

User's Manual

8-Port 10/100/1000Mbps

Gigabit Ethernet Switch

GSD-800

User's Manual

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To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

PLANET 8-Port 10/100/1000Mbps Gigabit Ethernet Switch User's Manual
For Model: GSD-800

Revision: 3.0 (JANUARY. 2008)

Part No: EM_GSD800v3 (2010-A35030-001)

TABLE OF CONTENTS

INTRODUCTION

1.1 Package Contents

● Check the contents of your package for following parts:

● Gigabit Ethernet Switch x 1

● User's manual x 1

● Power cord x 1

● Rubber feet x 4

If any of these are missing or damaged, please contact your dealer immediately, if possible, retain the carton including the original packing material, and use them against to repack the product in case there is a need to return it to us for repair.

1.2 How to Use This Manual

This Gigabit Ethernet Switch User Manual is structured as follows:

Chapter 2 Installation

The chapter explains the feature, functionality and the physical installation of the Gigabit Ethernet Switch.

Chapter 3 Switch operation

The chapter explains the Gigabit Ethernet Switch transmit operation.

Chapter 4 Troubleshooting

The chapter explains the troubleshooting of the Gigabit Ethernet Switch.

Appendix A

This chapter contains cable information of the Gigabit Ethernet Switch.

1.3 Product Features

● Comply with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3ab 1000Base-T

- Eight 10/100/1000Mbps Gigabit Ethernet ports
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- Hardware based 10/100Mbps half / full duplex and 1000Mbps full duplex mode, flow control and auto-negotiation
- IEEE 802.3x flow control for full duplex operation and Backpressure for half duplex operation
- Integrated address look-up engine, support 8K absolute MAC addresses
- 9K Jumbo packet support
- Automatic address learning and address aging
- Supports Auto MDI/MDI-X function
- Support CSMA/CD protocol
- FCC, CE class A compliant

1.4 Product Specifications

Model	GSD-800
Hardware Specification	
Network Ports	8-Port 10/100/1000Base-T auto MDI/MDI-X
Dimensions (W x D x H)	217 x 135 x 43.5 mm, 1U height
Weight	1.1kg
Power Requirement	100~240 V AC, 50/60Hz
Power Consumption	21 Watts maximum, 71 BTU/hr
Switch Specification	
Switch Architecture	Store-and-Forward
Mac Address Table	8K entries, auto learning / aging
Shared Data Buffer	144K byte packet memory
Flow Control	Back pressure for half duplex, IEEE 802.3x Pause Frame for full duplex
Packet Control	Runt & CRC filtering, Broadcast storm control
Switch Throughput	11.9Mpps
Switch Fabric	16Gbps
Standards Conformance	
Network Standards	IEEE 802.3 (Ethernet) IEEE 802.3u (Fast Ethernet) IEEE 802.3ab (Giga Ethernet) IEEE 802.3x (Flow control)
Operation Temperature	0~50 degree C
Storage Temperature	-40~70 degree C
Humidity	Operating: 5% to 90% Storage: 5% to 90% (Non-condensing)
Regulation Compliance	FCC Part 15 Class A, CE

INSTALLATION

This section describes the functionalities of the Gigabit Ethernet Switch's components and guides how to install it on the desktop. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

In the following section, the term "Switch" means the Switch, GSD-800; term of "switch" can be any third part switches.

2.1 Product Description

The PLANET GSD-800 is a 10/100/1000Mbps Gigabit Ethernet Switch in a compact housing for easily desktop placement. With 8 ports respectively, non-blocking wire-speed performance and 16Gbps internal switching fabric, the Switch can handle extremely large amounts of data in a secure topology linking to a backbone or high capacity servers. The Switch has 8K MAC Address table. The Switch offers wire-speed packets transfer performance without risk of packet loss. The high data throughput of Switch makes it ideal for most Gigabit environments, especially while network upgrades to a Gigabit environment.

All RJ-45 copper interfaces support 10/100/1000Mbps Auto-Negotiation for optimal speed detection through RJ-45 Category 6, 5 or 5e cables. Support is standard for Auto-MDI/MDI-X that can detect the type of connection to any Ethernet device without requiring special straight or crossover cables.

The Flow Control function allows your Gigabit Ethernet Switch supported routers and servers to directly connect to this Switch for fast, reliable data transfer.

2.1.1 Product Overview

The PLANET GSD-800 is a Gigabit Ethernet Switch with 8 RJ-45 10/100/1000Mbps ports for high-speed network connectivity. The Switch can also automatically identify and determine the correct transmission speed and half / full duplex mode of the attached devices with its 8 ports. The Gigabit ports with jumbo frame feature supported, can handle extremely large amounts of data transmission in a secure topology linking to a backbone or high-power servers.

The GSD-800 also supports Store-and-Forward forwarding scheme to ensure low latency and high data integrity, eliminates unnecessary traffic and relieves congestion on critical network paths. With an intelligent address recognition algorithm, the Switch could recognize up to 8K different MAC address and enables filtering and forwarding at full wire speed.

2.1.2 Switch Front Panel
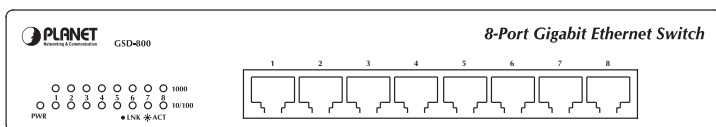
Figure 2-1 shows a front panel of GSD-800.

Figure 2-1 GSD-800 front panel

2.1.3 LED Indicators

LED	Color	Function	
PWR	Green	**Lights**	to indicate that the Switch is powered on.
1000	Green	**Lights**	to indicate that the Switch is successfully connecting to the network at 1000Mbps.
		Blinks	to indicate the Switch is receiving or sending data.
10/100	Green	**Lights**	to indicate that the Switch is successfully connecting to the network at 10/100Mbps.
		Blinks	to indicate the Switch is receiving or sending data.

2.1.4 Switch Rear Panel

Figure 2-2 shows a rear panel of GSD-800.

Figure 2-2 GSD-800 rear panel

Power Notice:

1. The device is a power-required device, it means, it will not work till it is powered. If your networks should active all the time, please consider using UPS (Uninterrupted Power Supply) for your device. It will prevent you from network data loss or network downtime.

2. In some area, installing a surge suppression device may also help to protect your Switch from being damaged by unregulated surge or current to the Switch or the power adapter.

2.2 Installing the Switch

This part describes how to install your Gigabit Ethernet Switch and make connections to it. Please read the following topics and perform the procedures in the order being presented.

Note	This Switch does not need software configuration.

2.2.1 Desktop Installation

To install the Switch on desktop, simply follow the next steps:

Step 1: Attach the rubber feet to the recessed areas on the bottom of the Switch.

Step 2: Place the Switch on desktop near an AC power source.

Step 3: Keep enough ventilation space between the Switch and the surrounding objects.

Note	When choosing a location, please keep in mind the environmental restrictions discussed in Chapter 1, Section 1.4 Product Specifications.

Step 4: Connect your Switch to network devices.

A. Connect one end of a standard network cable to the 10/100/1000 RJ-45 ports on the front of the Switch.

B. Connect the other end of the cable to the network devices such as printer servers, workstations or routers…etc.

	Connection to the Switch requires UTP Category 5 network cabling with RJ-45 tips. For more information, please see the Cabling Specification in Appendix A.
Note	

Step 5: Supply power to the Switch.

A. Connect one end of the power cable to the Switch.

B. Connect the 100-240V AC power cord to a standard wall outlet.

When the Switch receives power, the Power LED should remain solid Green.

3. Switch Operation

3.1 Address Table

The Switch is implemented with an address table. This address table composed of many entries. Each entry is used to store the address information of some node in network, including MAC address, port no, etc. This information comes from the learning process of Ethernet Switch.

3.2 Learning

When one packet comes in from any port, The Switch will record the source address, port no. And the other related information in address table. This information will be used to decide either forwarding or filtering for future packets.

3.3 Forwarding & Filtering

When one packet comes from some port of the Ethernet Switching, it will also check the destination address besides the source address learning. The Ethernet Switching will lookup the address-table for the destination address. If not found, this packet will be forwarded to all the other ports except the port which this packet comes in. And these ports will transmit this packet to the network it connected. If found, and the destination address is located at different port from this packet comes in, the Ethernet Switching will forward this packet to the port where this destination address is located according to the information from address table. But, if the destination address is located at the same port with this packet comes in, then this packet will be filtered. There by increasing the network throughput and availability.

3.4 Store-and-Forward

Store-and-Forward is one type of packet-forwarding techniques. A Store-and Forward Ethernet Switching stores the incoming frame in an internal buffer, do the complete error checking before transmission. Therefore, no error packets occurrence, it is the best choice when a

network needs efficiency and stability.

The Ethernet Switch scans the destination address from the packet-header, searches the routing table provided for the incoming port and forwards the packet, only if required. The fast forwarding makes the Switch attractive for connecting servers directly to the network, thereby increasing throughput and availability. However, the Switch is most commonly used to segment existing hubs, which nearly always improves overall performance. An Ethernet Switching can be easily configured in any Ethernet network environment to significantly boost bandwidth using conventional cabling and adapters.

Due to the learning function of the Ethernet Switching, the source address and corresponding port number of each incoming and outgoing packet are stored in a routing table. This information is subsequently used to filter packets whose destination address is on the same segment as the source address. This confines network traffic to its respective domain, reducing the overall load on the network.

The Switch performs **"Store and Forward"** therefore, no error packets occur. More reliably, it reduces the re-transmission rate. No packet loss will occur.

3.5 Auto-Negotiation

The STP ports on the Switch have built-in **"Auto-negotiation"**. This technology automatically sets the best possible bandwidth when a connection is established with another network device (usually at Power On or Reset). This is done by detect the modes and speeds at the second of both device is connected and capable of, both 10Base-T and 100Base-TX devices can connect with the port in either Half- or Full-Duplex mode. 1000Base-T can be only connected in Full-duplex mode.

4. TROUBLESHOOTING

This chapter contains information to help you solve issues. If the Switch is not functioning properly, make sure the Gigabit Ethernet Switch was set up according to instructions in this manual.

The per port LED is not lit

Solution:

Check the cable connection of the GSD-800.

Performance is bad

Solution:

Check the speed duplex mode of the partner device. The GSD-800 is run at Auto-negotiation mode and if the partner is set to half duplex, then the performance will be poor.

Per port LED is lit, but the traffic is irregular

Solution:

Check that the attached device is not set to dedicate full duplex. Some devices use a physical or software switch to change duplex modes. Auto-negotiation may not recognize this type of full-duplex setting.

Why the Switch doesn't connect to the network

Solution:

Check per port LED on the Switch. Try another port on the Switch Make sure the cable is installed properly Make sure the cable is the right type Turn off the power. After a while, turn on power again.

APPENDIX A: NETWORKING CONNECTION

A.1 Switch's RJ-45 Pin Assignments

1000Mbps, 1000Base-T

Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

10/100Mbps, 10/100Base-TX

Contact	MDI Media Dependant Interface	MDI-X Media Dependant Interface -Cross
1	Tx + (transmit)	Rx + (receive)
2	Tx - (transmit)	Rx - (receive)
3	Rx + (receive)	Tx + (transmit)
4, 5	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	Not used	

A.2 RJ-45 cable Pin Assignments
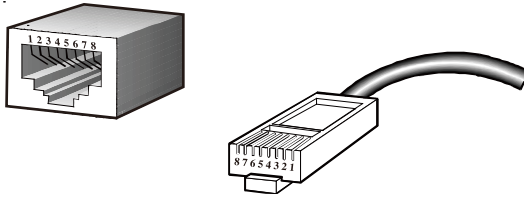
The standard RJ-45 receptacle/connector

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:
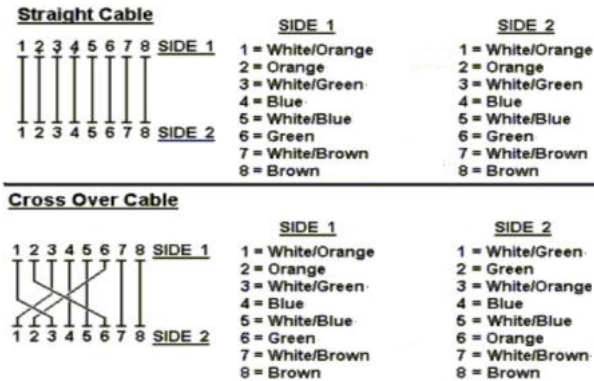

Straight Cable

	SIDE 1	SIDE 2
1	White/Orange	White/Orange
2	Orange	Orange
3	White/Green	White/Green
4	Blue	Blue
5	White/Blue	White/Blue
6	Green	Green
7	White/Brown	White/Brown
8	Brown	Brown

Cross Over Cable

	SIDE 1	SIDE 2
1	White/Orange	White/Green
2	Orange	Green
3	White/Green	White/Orange
4	Blue	Blue
5	White/Blue	White/Blue
6	Green	Orange
7	White/Brown	White/Brown
8	Brown	Brown

Figure A-1: Straight-Through and Crossover Cable

Please make sure your connected cables are with same pin assignment and color as above picture before deploying the cables into your network.

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LAN Switches